



NEXT-GENERATION IOT CONNECTIVITY PLATFORMS: POWERING IOT INTO THE FUTURE

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Next-Generation IoT Connectivity Platforms: Powering IoT into the Future

Introduction

The newest IoT connectivity platforms are making global IoT connectivity simple while delivering powerful tools and flexibility to the enterprise.

Many IoT deployments involve widely dispersed fleets of devices, often distributed internationally. Some objects move across borders, such as shipping containers or vehicles. In other cases, a company may ship devices to multiple countries and expect those devices to connect back to headquarters from whichever country they land in.

This international connectivity requirement does not align well with the geographically fragmented telecoms industry. Consequently, an international IoT deployment must cope with many different telecom networks, support channels, quality of service commitments, and contract negotiations. This situation creates an administrative barrier, increased costs and complexity, and a higher likelihood of devices being dropped from a network and stranded far from home.

A common solution for this fragmented connectivity market is to use a tier-1 mobile carrier's SIM cards and send the devices off to permanently roam on other networks. Yet permanent roaming has its own disadvantages: distant roaming partners and regulators may dislike the practice, and potentially block it. Furthermore, it tends to lock a company in to a single carrier's services. Once signed on with an operator, the enterprise customer would face a significant logistical challenge to swap SIMs in remote markets.

Two main technology trends are enabling an overhaul of this market structure. First, embedded SIMs (eSIMs) enable remote management of network selection, allowing easy over-the-air transfers of fleets of devices between mobile networks. Second, a new generation of managed connectivity platforms is enabling a customer to easily manage various network connections, contracts, policies and security practices from a single pane of glass. In rare cases, platforms can even extend beyond cellular networks to manage fleets of devices connected over WiFi, LoRaWAN, satellites, and other networks. Such platforms reduce the vast complexity of IoT connectivity management to a simple, flexible set of controls for the customer.

AT A GLANCE

WHAT'S IMPORTANT

Managed connectivity platforms are making global cellular IoT connectivity easy. Telcos have struggled to provide global IoT connectivity.

- » Network coverage is incomplete
- » Networks are geographically fragmented
- » Roaming is a flawed solution
- » And customers are often locked in to a single operator

Managed connectivity platforms aim to overcome these problems.

- » Connect to any network
- » Localise the device to avoid roaming
- » Use eSIMs to manage and change providers remotely
- » Avoid contract lock-in
- » Manage everything from a single platform

Benefits

A global enterprise IoT connectivity management platform should stitch together the many different networks and operators around the world to deliver a seamless global IoT connectivity service. In so doing, the platform should make global IoT connectivity simple and safe for the end customer. It should offer flexibility across network operators to obtain the needed coverage and service quality, while keeping total costs to a minimum.

To deliver such a service, a managed connectivity platform must meet several requirements. It should:

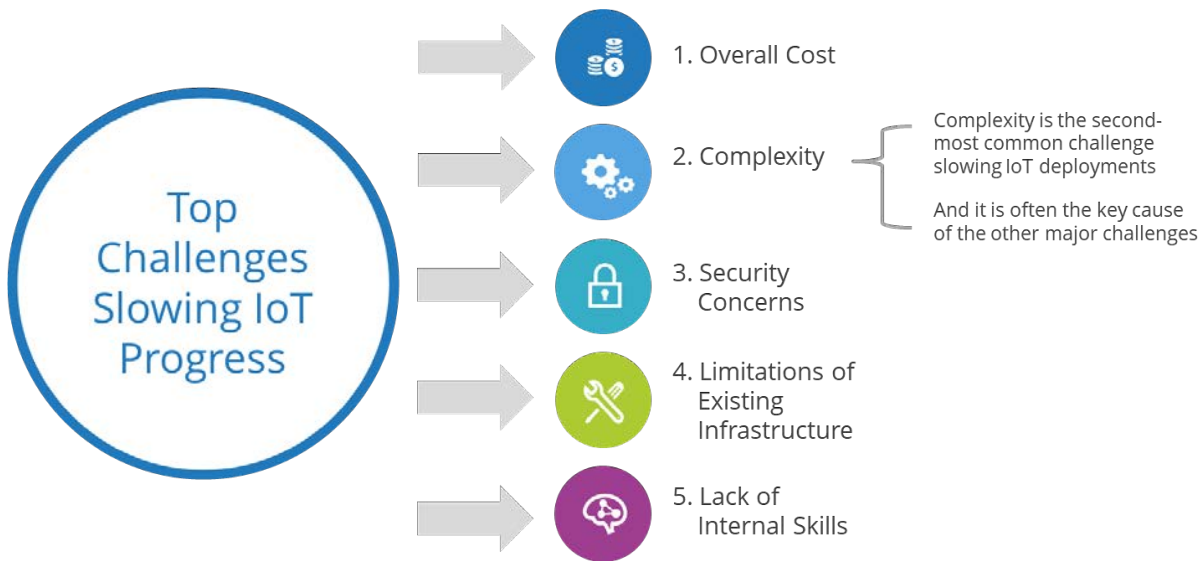
- Enable connectivity anywhere in the world to the best possible network.
- Enable switching to another network if the first one is not available or becomes uncompetitive.
- Ensure that a change of network is handled securely and with multiple fallback systems, so that devices are not stranded in the event of a failed transfer.
- Arrange the telecom service provider relationships globally, sparing the customer the trouble.
- Manage device connections not only from cellular networks, but also from WiFi, LoRaWAN, satellites, and other technologies.
- Allow customers to negotiate their own contracts directly with carriers, where desired, while still managing those services from within the platform.
- Provide flexibility so the customer can choose carriers for specific markets or even at the granular level of individual devices.
- Ensure compliance with local regulations and operator terms of service.
- Allow the enterprise to set security and other policies once centrally, while the platform uses APIs to push the policies out to all connected devices, networks, and platforms.

Trends

While IoT is now being widely embraced across all industries, device connectivity remains problematic for several reasons.

It remains a challenge, in part, because IoT use cases have a wide range of different requirements. There has been a lot of excitement over 5G use cases that will leverage extremely high bandwidth and ultra-low latency to deliver a variety of advanced new solutions, such as autonomously guided vehicles and factory automation. On the other end of the spectrum, there are many use cases with low-cost devices that use simpler sensors, run on a battery, and send a small amount of data. These use cases can include environmental monitoring sensors, asset trackers, condition monitoring, and many others. The wide range of use cases requires a variety of devices and networks, and that is a key reason why IoT remains complex.

FIGURE 1
Top Challenges Slowing IoT Deployments in Europe



Source: IDC, European IoT Survey, November 2020

International projects make the situation far more difficult. Vehicles, shipping containers, and other assets often cross borders and require connectivity be handed off to new networks. Even the stationary assets may be deployed widely across multiple countries, requiring an easy way for the producer or distributor to manage the connectivity of a fleet across many jurisdictions.

International IoT connectivity should not be complicated, but many companies experience significant challenges in this area when they develop their projects. The telecom industry's fragmentation along national borders creates a patchwork of different operators and regulatory environments, involving multiple management platforms, varied network availability, and a thicket of different connectivity contracts. If a customer takes the simpler route of choosing a single network operator for their global deployment, they may face unreliable service, indifference or resistance from roaming partners, and lock-in to their contracted service provider.

To cope with these challenges to global connectivity, certain advanced providers have developed an extra service layer on top of the local telecom networks. The global connectivity service layer allows a customer to access a single platform that links the many national networks around the world.

Using eSIM technology, these platforms give organisations great flexibility with their choice of network operators. With the right eSIMs, devices can be activated on local networks that support the technology. That allows them to minimise the use of permanent roaming. It also allows an organisation to switch network operators as needed or desired. The platform smoothly transitions between networks, while retaining the policies already defined and integrating the new network's APIs so that the customer can continue managing the connections from the familiar controls within the platform.

The platform effectively takes on the role of handling the immense complexity of the global connectivity market, simplifying the customer's experience while increasing their flexibility and strengthening their hand in negotiations with service providers.

Now that such platforms are mastering the art of managing global cellular connectivity, some are even starting to incorporate support for non-cellular technologies, such as WiFi, LoRaWAN, and satellites. Eliminating the separate cellular and non-cellular silos will be another leap forward in simplifying IoT connectivity, enabling enterprises to push ahead with whatever type of connection is most appropriate for their use case, without increasing management complexity.

This managed connectivity layer is also an advantage to network operators. In a general sense, it is helping to accelerate the development of the IoT connectivity market overall. As operators have struggled to deliver global connectivity for customers, the IoT market has been held back. This new managed connectivity layer is likely to accelerate international IoT deployments. And in some cases, telcos are partnering with such platforms on a white-label basis, allowing the telcos to offer global managed connectivity to their enterprise customers, which they would have been unable to offer on their own.

In summary, advanced new global connectivity platforms are vastly simplifying IoT connectivity, enabling faster project deployments and complete control for the enterprise, and now extending beyond cellular to whatever type of connectivity enterprises may need in the future.

Considering Eseye

Eseye's Infinity Platform Makes Global IoT Connectivity Simple and Flexible

Eseye is a global IoT connectivity provider that cuts through the complexity of the fragmented global connectivity market. The company provides customers with a single platform to easily deploy devices around the world, choosing and switching providers and implementing policies from a single pane of glass. Eseye claims it can remove complexity from connectivity while increasing flexibility and delivering better results. It serves enterprises across many verticals and use cases. Past projects have included Amazon's network of lockers, Shell Recharge Solutions' network of electric vehicle chargers and Itron's smart meters.

Eseye's core offering is its Infinity IoT Platform™. This platform provides what Eseye calls "Mission control for IoT connectivity", giving the enterprise the tools to easily manage all the connectivity requirements globally, across different networks, operators and technologies. It provides access to Eseye's federation of network operators around the world, creating an integrated virtual mobile network. And the platform handles the provisioning of eSIMs across the virtual mobile network, localising onto the customer's preferred networks.

Crucially, Eseye extends its platform beyond cellular to manage other types of connection as well. The company already supports WiFi connectivity, seamlessly managing the switching of devices between cellular and WiFi networks. The company is also adding support for satellite or low earth orbit (LEO), Bluetooth and other non-cellular networks, all within the Infinity Platform.

In addition to the Infinity Platform, Eseye provides device advisory and design services to help customers quickly design, configure, test and certify the right devices for their needs. These services help customers to quickly launch their projects, thereby avoiding costly delays.

Key Platform Features

Eseye's Infinity Platform includes a range of features to provide enterprises with all the tools they need to deploy, connect and manage a fleet of IoT devices.

Connectivity and Network Optimisation

The core service is Connectivity and Network Optimisation. It enables companies to deploy their devices across the AnyNet Federation of Eseye partner networks. Devices use embedded SIMs (known as eUICC or eSIM) to connect from anywhere in the world onto Eseye's platform and to receive the needed profile to connect to the customer's preferred local network. That avoids dependence on permanent roaming, which many operators dislike and some regulators block. Additionally, it gives the enterprise flexibility to change providers, whether for better quality service or to avoid lock-in and overpriced services.

Eseye ties the federation of networks together using its own global software defined network. This global network is crucial for delivering secure global communication that ties together an organisation's entire fleet of IoT devices. It also allows Eseye to ensure low latency across the network, delivering improved performance quality and reliability.

Flexibility to Bring Your Own Contract (BYOC)

In addition to Eseye's partner networks, customers still have the flexibility to negotiate their own contracts directly with local operators, if desired. Eseye leverages the APIs from the local network operators and integrates the management features from those partners into the Infinity Platform. Customers therefore have as much control over individual operator relationships as they like while still gaining full platform features for simple and efficient management.

Manage Connectivity Across Different Network Types

The Infinity Platform supports the full range of cellular network standards, such as LTE, 5G, NB-IoT and LTE-M. Additionally, Eseye enables management of connections over WiFi, and it is committed to enabling companies to manage other types of connectivity from the same platform, such as LoRaWAN, WiFi or satellite connections, as well as connections to private LTE and 5G networks.

Subscription Management

In addition to choosing the network providers, the platform enables the management of connectivity subscriptions. With real-time reporting, customers can track and change services, subscriptions and service levels. Customers are free to choose between the service plans of the partner networks.

Device Management

In addition to connectivity management, the Infinity Platform includes device management features. Through the platform, customers can identify device models, capabilities and requirements, provision the devices and enrich device data in real time.

Security and Policy Management

The Infinity Platform enables customers to set security policies centrally and push those policies out to all devices across the various local networks. That includes authentication and identity management, connectivity security, compliance, API authentication, security and compliance operational integration

Reporting, Analytics and AI

The Infinity Platform includes a range of reporting features, including data feeds, alerts, a data lake, analytics tools, a report library and closed-loop control. Customers can easily view, manage and analyse the data on individual connections or across the fleet.

Integration with Hyperscale Clouds and Enterprise Applications

Many companies utilise hyperscale cloud providers to run their IoT applications and manage the data. Eseye's platform is integrated with major cloud providers to ensure secure and easy communication from device to cloud.

The Infinity Platform is also interoperable with key enterprise applications, such as Armis, to enable agentless IoT security, ensuring organisations can securely and reliably integrate solutions from end to end.

FIGURE 2
Eseye's Infinity Platform

Source: Eseye, 2022.

Challenges

Eseye has focused on making connectivity simple, because the current global connectivity environment, with its geographically fragmented networks, makes connectivity painfully complicated, and that is slowing progress in enterprise IoT.

However, Eseye is still dependent on the telecom network operators deploying and maintaining networks that enable IoT. The industry's moves to shut down 2G and 3G networks while giving insufficient attention to LPWAN alternatives can still slow Eseye's growth.

By integrating management of other kinds of networks in the future, such as LoRaWAN and satellites, Eseye may be able to overcome the weaknesses in the telecom industry, but it would not be easy, and it would increase demands on Eseye's engineers.

Given the chaotic connectivity environment, it may be difficult for Eseye to stand out from competitors. Eseye's strategy, platform, and services are significantly differentiated, but the company will have to work especially hard to cut through the noise.

Conclusion

Enterprises know that IoT will bring tremendous benefits and be a key part of their digital transformation, but complexity has made progress much slower than it could be. Connectivity remains a fragmented market, requiring compliance with varied regulatory and legal environments, and potentially hundreds of different carrier relationships. This complexity slows development of IoT projects and raises their costs.

Many of the common solutions to this problem are imperfect, potentially falling foul of regulators or operators, restricting the enterprise's choice of carriers, and/or failing to enable central management of connectivity policies.

Eseye has taken a different approach. The company aims to provide a single platform that delivers maximum simplicity, while still giving the customer complete control and the widest range of choices. By providing a platform that integrates with carrier partners around the world while enabling granular policy controls, Eseye is taking the complexity out of global IoT connectivity, while still delivering affordability and control. And by leveraging its expertise in hardware and solution design, the company can jumpstart an enterprise's IoT project, shave months off the time to launch, and ensure the devices are optimised, secured, integrated, and ready for deployment, straight out of the box.

IDC believes that a global connectivity platform that separates the management layer from the individual carrier networks will enable enterprises to finally gain the benefits of IoT that have long been promised. To the extent that Eseye can deliver this simplicity in global IoT connectivity, the company has a significant opportunity for success.

MESSAGE FROM THE SPONSOR

We unlock the full potential of IoT, free from the complexities of global cellular connectivity.

We have everything you need to move from initial concept to global deployment. We do this through seamless connectivity, technical consultancy and versatile hardware, backed by round-the-clock support. All with a focus on helping our customers concentrate on driving business value, deploying differentiated experiences, and disrupting their markets — without limits.

Together, our AnyNet SIM technology, Infinity IoT Connectivity Platform and partner ecosystem connect millions of devices across 190 countries. We bring together over 700 networks for 100% global coverage — and our evolving technology means our customers are ready for private 5G, satellite, and whatever else the future holds.

Find out more at www.eseye.com.

About the Analysts



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John Gole provides research and consulting on IoT strategies and opportunities to suppliers and enterprise technology users. He has over 20 years of experience in the telecommunications and IoT sectors.

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